AIM-120 Advanced Medium Range Air-to-Air Missile (AMRAAM)

AIM-120 is an all weather, radar guided, air-to-air missile with launch-and-leave capability in both the beyond-visual-range and within-visual-range arenas, enabling a single aircraft to simultaneously engage multiple targets with multiple missiles. The U.S. Air Force and Navy, as well as several foreign military forces use the AIM-120. Currently employed by the F-15C, F-15E, F-16, F/A-18C/D, and F/A-18E/F, AIM-120 will also be employed by the F/A-18E/F, F-22, and Joint Strike Fighter.

The AIM-120C variant was developed to reduce missile size to allow for increased internal carriage in the F-22. Lethality improvements have been incorporated into the missile, culminating in a new warhead and lengthened rocket motor. All current U.S. deliveries are of the AIM-120C configuration. The program's acquisition strategy is to incrementally improve missile capability through software and hardware modifications that are grouped in three Pre-Planned Product Improvement (P^3I) phases, the first two of which have completed development and are fielded.

The third phase of the development program is underway to improve weapons system effectiveness and lethality. The Phase 3 missile, scheduled to begin production in FY04, will include new guidance section hardware and software. The antenna, receiver, and signal processing portions of the system are being upgraded to handle the requirements to counter new threats, and will be compressed to create room for future growth. Some existing software will be re-hosted to a new Higher Order Language (C++), some existing software will be re-hosted and modified to function with the new hardware, and some additional software algorithms are being written to react to the new Phase 3 threats.

A Follow-on Test and Evaluation of the P^3I Phase 1 missile was completed in 1999. This was a joint Air Force and Navy evaluation, emphasizing testing of lethality improvements in early missiles and later culminating with the new warhead and rocket motor. The Live Fire Test and Evaluation program for the new warhead included characterization of the new contact fuze and arena testing of the warhead.

TEST & EVALUATION ACTIVITY

The Navy and the Air Force continue to conduct free-flight and captive-carry operational testing of the P^3I Phase 2 missile using production weapons. The Phase 2 operational testing was planned for completion in December 2002. The Navy was unable to complete planned operational testing due to aerial target test resource and test missile limitation issues that the service and program office are attempting to resolve.

The Test and Evaluation Master Plan (TEMP) for the P^3I Phase 3 missile was approved by DOT&E in June 2002. Developmental Test and Evaluation (DT&E) of the Phase 3 missile has begun with a small number of captive carry missions and hardware-in-the-loop testing. The Air Force's Air Combat Command, and Navy's Air Test and Evaluation Squadron, will conduct the operational test and evaluation under the oversight of the Air Force Operational Test and Evaluation Command and the Navy's Commander Operational Test Force in FY04. The operational test and evaluation will consist of captive carry, simulations using the contractor's model, and ten guided free flight evaluations against threat representative targets. The evaluation will include integration on F-15, F-16, F/A-18C/D, and F-/A-18E/F aircraft. In

The program's acquisition strategy is to incrementally improve missile capability and integration on F-16, F-15, and F/A-18 fighter aircraft.

accordance with the TEMP, free-flight events will be repeated as necessary to ensure that missile capabilities in the discrete scenarios are fully evaluated.

TEST & EVALUATION ASSESSMENT

The Phase 3 P^3I missile is largely a new missile with distinct capabilities from previous variants of the AIM-120. Hardware and software changes in the guidance section are significant. The improvements sought by the user are intended to increase air-to-air combat capability of both services. However, as acknowledged in the TEMP, the program will not deliver all of the Phase 3 requirements called for in its joint operational requirements document. In the upcoming follow-on operational test and evaluation, DOT&E will independently assess the impact of any required capability that is not developed and operationally tested when reporting the operational effectiveness and suitability of performance of the missiles actually tested.